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Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.  
Larsen

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January 1936

## Test 250: Silver King 3-Wheel

Tractor Museum

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT  
 AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 250

Dates of test: March 23 to April 20, 1936.  
 Name and model of tractor: SILVER KING 3-WHEEL  
 Manufacturer: Fate-Root-Heath Company, Plymouth, Ohio.  
 Manufacturer's rating: NOT RATED.

B R A K E H O R S E P O W E R T E S T S

H. P.	:Crank : :shaft :	Fuel Consumption	: Water Consumption : : per hour gallons :	Temp. : : Deg. F. :	: Barometer
:speed :	Gals. : H. P. :Lbs.per	: Cool- : In :	: Cool-:	:Inches of	
:R.P.M.:	per :hrs. per: H. P. :	: ing : fuel : Total :	: ing : Air :	:Mercury	
:	: hour : gal. : hour :	: : : : : : :	: med. : :	:	

TESTS B & C 100% MAXIMUM LOAD. TWO HOURS

19.74	: 1401	: 2.348	: 8.41	: 0.733	: 0.000	: 0.000	: 0.000	: 189	: 55	: 29.040
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TEST D RATED LOAD. ONE HOUR

17.35	: 1404	: 2.060	: 8.42	: 0.730	: 0.000	: 0.000	: 0.000	: 190	: 59	: 29.090
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TEST E \*VARYING LOAD. TWO HOURS

17.36	: 1398	: 2.021	: 8.59	: 0.717	: --	: --	: --	: 190	: 59	: --
0.85	: 1677	: 1.106	: 0.77	: 8.012	: --	: --	: --	: 185	: 60	: --
9.79	: 1579	: 1.622	: 6.04	: 1.020	: --	: --	: --	: 190	: 60	: --
18.48	: 1309	: 2.162	: 3.55	: 0.721	: --	: --	: --	: 190	: 62	: --
5.05	: 1625	: 1.286	: 3.93	: 1.568	: --	: --	: --	: 189	: 61	: --
14.06	: 1509	: 1.885	: 7.46	: 0.826	: --	: --	: --	: 190	: 62	: --
10.94	: 1516	: 1.680	: 6.51	: 0.946	: 0.000	: 0.000	: 0.000	: 189	: 60	: 29.030

\*20 minute runs. Last line is average for two hours.

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D R A W B A R H O R S E P O W E R T E S T S

STEEL WHEELS

	: Draw	: Speed	: Crank	: Slip	: Fuel Consumption	: Water	: Temp.	:
H. P.	: bar	: miles	: shaft	: on	: H. P.	: Lbs.	: used	: Barometer
	: pull	: per	: speed	: drive	: Gal.:	: hour	: per	: Gal.:
	: pounds:	: hour	: R.P.M.:	: wheels:	: per	: per	: H.P.:	: per
	:	:	:	: %	: hour:	: gal.:	: hour:	: hour:
	:	:	:	:	:	:	: med.:	:

TESTS F & G MAXIMUM LOAD

10.56	: 1974	: 2.01	: 1400	: 21.19	: -----	: Not Recorded	: -----	: 210	: 90	: 28.600
13.04	: 1321	: 3.70	: 1401	: 8.86	: -----	: " "	: -----	: 195	: 77	: 28.710
9.45	: 523	: 6.77	: 1401	: 5.39	: -----	: " "	: -----	: 195	: 85	: 28.655

TEST H RATED LOAD. TEN HOURS. Second GEAR.

10.51	: 1045	: 3.77	: 1399	: 7.03	: 1.925	: 5.46	: 1.128	: 0.000	: 195	: 74	: 28.970
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FUEL ECONOMY TEST. Four HOURS. Third GEAR.

8.10	: 441	: 6.89	: 1400	: 3.68	: 1.855	: 4.37	: 1.411	: 0.000	: 167	: 42	: 29.110
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RUBBER TIRES

	: Draw	: Speed	: Crank	: Slip	: Fuel Consumption	: Water	: Temp.	:
H. P.	: bar	: miles	: shaft	: on	: H. P.	: Lbs.	: used	: Barometer
	: pull	: per	: speed	: drive	: Gal.:	: hour	: per	: Gal.:
	: pounds:	: hour	: R.P.M.:	: wheels:	: per	: per	: H.P.:	: per
	:	:	:	: %	: hour:	: gal.:	: hour:	: hour:
	:	:	:	:	:	:	: med.:	:

TEST G OPERATING MAXIMUM LOAD

8.88	: 1647	: 2.02	: 1399	: 14.12	: -----	: Not Recorded	: -----	: 185	: 54	: 29.120
12.66	: 1538	: 3.09	: 1401	: 17.86	: -----	: " "	: -----	: 160	: 41	: 29.120
16.44	: 990	: 6.23	: 1402	: 6.12	: -----	: " "	: -----	: 190	: 63	: 29.025
14.30	: 364	: 14.73	: 1394	: 1.85	: -----	: " "	: -----	: 170	: 61	: 29.050

FUEL ECONOMY TEST. Four HOURS. Second GEAR.

10.50	: 1142	: 3.45	: 1401	: 8.32	: 1.534	: 6.84	: 0.900	: 0.000	: 191	: 68	: 29.010
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FUEL ECONOMY TEST. Four HOURS. Third GEAR.

13.40	: 792	: 6.35	: 1400	: 4.20	: 1.808	: 7.41	: 0.831	: 0.000	: 191	: 70	: 28.530
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BRIEF SPECIFICATIONS

MOTOR: Make Hercules Serial No. 406947 Type 4 cylinder, vertical  
 Head L Mounting Crankshaft lengthwise  
 Bore and stroke: 3 1/4" x 4" Rated R. P. M. 1400  
 Port Diam. Valves: Inlet 1 1/4" Exhaust 1 1/8"  
 Belt pulley: Diam. 6 1/2" Face 6 1/4" R. P. M. 1400  
 Magneto: Fairbanks-Morse Model RV-4  
 Carburetor Zenith Model 193 1/2 Size 1"  
 Governor: Hercules No. -- Type Centrifugal  
 Air Cleaner: Air-Maze Type Oil washed screen filter  
 Lubrication: Pressure

CHASSIS: Type 3 wheels, 2 drivers Serial No. 996 Drive Enclosed gear  
 Clutch: Borg & Beck Type Dry disc Operated by foot pedal  
 Advertised speeds, miles per hour: First 2.25 Second 3.35  
 Third 5.5 Fourth 14.5\* Reverse 1.5

Steel: Drive wheels: Diameter 42" Face 1 1/2" channel  
 Lugs: Type Spade No. per wheel 20 Size 3" high x 2 3/4" wide  
Rubber: Drive wheel tires 9.00" x 24" Air pressure 16 pounds  
 Front wheel tires 6.00" x 16" Air pressure 25 pounds  
 Weight per drive wheel 3 Average total weight 420 pounds  
 Seat: Pressed steel  
 Total weight as tested (with operator) Steel 2790 pounds  
Rubber 3615 pounds

FUEL AND OIL:

Fuel: Gasoline Weight per gallon 6.16 pounds  
 Oil: S.A.E.#30

Total oil to motor 1.307 gallons The oil was drained  
 Total drained from motor 0.700 gallons once - at the end  
 of the test.

Total time motor was operated 73 hours

\*Up to 25 m.p.h. according to motor speed.  
 Not recommended for steel wheels.

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REPAIRS AND ADJUSTMENTS

While making a preliminary belt test the motor over-heated. The radiator core, which was painted with aluminum paint and was not equipped with a shroud, was replaced by one unpainted and having a shroud. The aluminum paint was removed from the motor and the two-ground electrode type spark plugs were replaced by single-ground electrode plugs. All of the official test data were taken after these changes were made.

At the end of the test it was found that insufficiently tightened cylinder head bolts had permitted water to leak from the cooling system into the second and third cylinders.

REMARKS

All results shown on pages 1 and 2 of this report were determined from observed data and without allowances, additions or deductions. Tests B and F were made with carburetor set for 100% maximum horsepower and these figures were used in determining the ratings recommended by the A.S.A.E. and S.A.E. tractor rating codes. Tests C, D, E, G and H were made with an operating setting of the carburetor (selected by the manufacturer) of 100% of maximum horsepower.

Observed maximum horsepower (tests B & F) Drawbar 13.04 Belt 19.74

Sea level (calculated) maximum horsepower Drawbar 13.61 Belt 20.23  
 (Based on 60° F. and 29.92" Hg.)

Highest permissible horsepower ratings Drawbar 10.36 Belt 17.20  
 (As recommended by A.S.A.E. and S.A.E. codes)

The 100% maximum belt and drawbar tests were not included in reports issued from 1928 to 1934 inclusive, except in those cases where the 100% maximum setting was used throughout the complete test.

We, the undersigned, certify that the above is a true and correct report of official tractor test No. 250.

Carlton L. Zink  
 Engineer-in-charge

E. E. Brackett

C. W. Smith

L. W. Hurlbut